

Using a Dynamic Modeling Approach to Understanding Resilience

Ignacio J Martinez-Moyano, Ph.D.
Systems Science Center
Global Security Sciences Division
Argonne National Laboratory
Argonne, IL, USA
imartinez@anl.gov

Abstract— To understand and adequately address the multiple dimensions of resilience, we must use an approach that can combine the points of view of different stakeholders and account for all emergent dynamic processes. The actions (and reactions) of the public, government officials, and first responders in preparing for and responding to emergencies are at the core of community resilience. Community resilience increases or decreases as a function of how the technical systems (e.g., critical infrastructure) and the social systems (e.g., individuals and social organizations) interact, creating the potential to leverage the knowledge and abilities of all stakeholders to enhance the technical capabilities of the systems. Changes that occur on the technical side impact the social side in ways that are difficult to anticipate without a systemic approach to understanding these interrelationships. Dynamic modeling provides an approach that has proven useful in understanding complex interconnectedness. In this talk, we explain the overall approach and present a conceptual model of an initial theory of the dynamic drivers of resilience.

Keywords—*system dynamics, dynamic systems, behavioral implications, human dimension, resilience*

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